TABLE 5.2

INITIAL SCREENING OF REMEDIAL TECHNOLOGIES

Environmental Media	General Response Action	Remedial Technology	Process Option	Retain For Further Analysis	Screening Comments
	Off-Site Treatment	POTW	Not Applicable	Yes	May be an effective means of groundwater treatment.
		RCRA Facility	Not Applicable	No	Concentrations of contaminants in the ground water are not high enough to warrant this type of treatment.
	On-Site Disposal	Deep Well Injection	Not Applicable	No	Requires installation of well through bedrock. May cause contamination of deeper aquifers.
Air	No Action	None	Not Applicable	Yes	The No Action Alternative will be carried through to the Detailed Analysis of Alternatives.
	Institutional Action	Access Restriction	Entry Permit Program	Yes	May be effective in reducing potential exposure to gas in sewer lines.
		Monitoring	Air Monitoring/ Confined Space Tests	Yes	On-going monitoring of site air quality and confined space monitoring of sewer air may be applicable.
	On-Site Treatment	Gas Recovery/ Treatment	Adsorption	Yes	May be appropriate in conjunction with vapors generated by soil/groundwater treatment.
			Thermal Oxidation	Yes	May be appropriate in conjunction with vapors generated by soil/groundwater treatment.
			Flare	No	Marginally effective for chlorinated VOCs.

TABLE 5.3

SUMMARY OF CORRECTIVE MEASURE ALTERNATIVES

Former Amphenol Site
Franklin, Indiana

Alternative Number	Corrective Measure Technologies
1	No Action
2	Institutional Controls; Monitoring
2A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM)
3	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Groundwater Sparging; Soil Vapor Extraction
4	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation, Aeration, and Backfill
4A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation and Off-Site Disposal
5	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Focused Groundwater Sparging and Soil Vapor Extraction
6	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM) and Activated Carbon Polishing; Reinjection of Treated Water to Promote Soil Flushing

TABLE 6.1

EVALUATION OF CORRECTIVE MEASURE ALTERNATIVES BASED ON ABILITY TO ACHIEVE ENVIRONMENTAL, INSTITUTIONAL, AND TECHNICAL CRITERIA

Alternative	CorrectiveMeasure Technologies	Corrective Measure Evaluation Criteria				
		Environmental	Institutional	Technical		
				Soil	Groundwater	Surface Water
1	No Action	low	low	low	low	low
2	Institutional Controls; Monitoring	low	high	low	low	low
2A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM)	high	high	moderate	high	high
3	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Groundwater Sparging; Soil Vapor Extraction	high	high	high	high	high
4	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation, Aeration, and Backfill	high	high	moderate	moderate	high
4A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation and Off-site Disposal	high	high	moderate	moderate	high
5	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Focused Groundwater Sparging and Soil Vapor Extraction	high	high	high	high	high
6	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM) and Activated Carbon Polishing; Reinjection of Treated Water to Promote Soil Flushing	high	high	moderate	high	high

Note: Evaluation is based on the liklihood of each corrective measure to meet the stated criteria.

TABLE 7.1

CAPITAL AND ANNUAL OPERATING COST SUMMARY
FOR CORRECTIVE MEASURE ALTERNATIVES

Former Amphenol Site
Franklin, Indiana

Alternative Number	Corrective Measure Technologies	Capital Cost ($)*	Annual Operating Cost ($)
1	No Action	NA	NA
2	Institutional Controls; Monitoring	24,000	33,000
2A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM)	24,000	76,000
3	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Groundwater Sparging; Soil Vapor Extraction	182,000	117,000
4	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation, Aeration, and Backfill	125,000	76,000
4A	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Soil Excavation and Off-Site Disposal	1,347,000	76,000
5	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM); Focused Groundwater Sparging and Soil Vapor Extraction	119,000	111,000
6	Institutional Controls; Monitoring; Groundwater Extraction and Treatment with Air Stripping (ICM) and Activated Carbon Polishing; Reinjection of Treated Water to Promote Soil Flushing	72,000	84,000

* Capital costs previously incurred for the ICM are not included.

Upper Shelbyville Road

Residential

Parking

EXISTING AIR STRIPPER BUILDING

RW-1

RW-2

RW-3

Residential

Pavement

Forsythe Street

Fire Station

Residential

Residential

Hamilton Avenue

City Street Facility

Infall

Infall

LEGEND

- Property Boundary
- Land Use Boundary
- Building Outline
- Recovery Well
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole

0 50 100 200

SCALE IN FEET

NORTH

EARTH TECH

07026ICM
VR030395

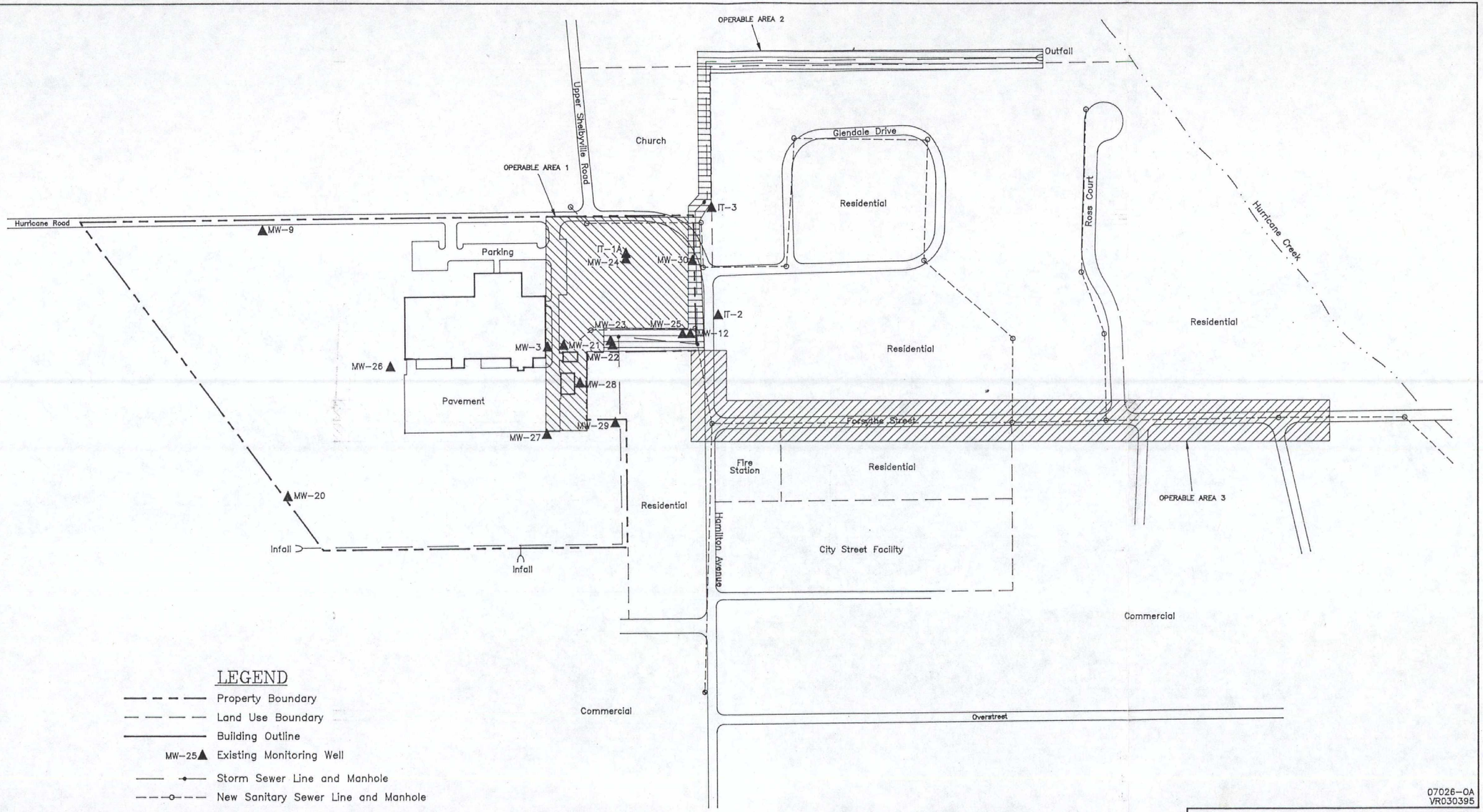
FIGURE 4-1

INTERIM CORRECTIVE MEASURE

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08



07026-0A
VR030395

FIGURE 5-1

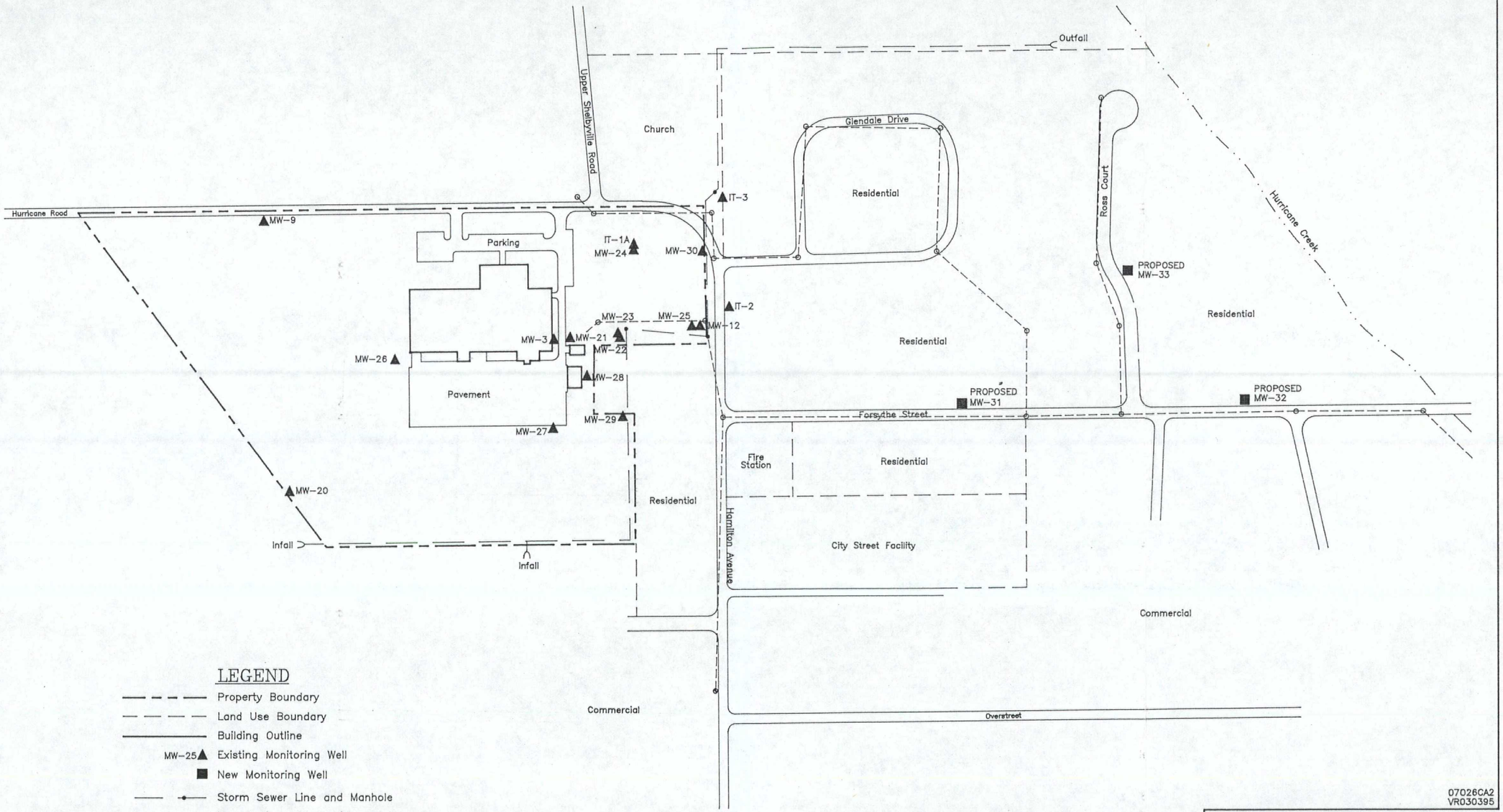
OPERABLE AREAS 1,2 & 3

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08

EARTH TECH



07026CA2
VR030395

EARTH TECH

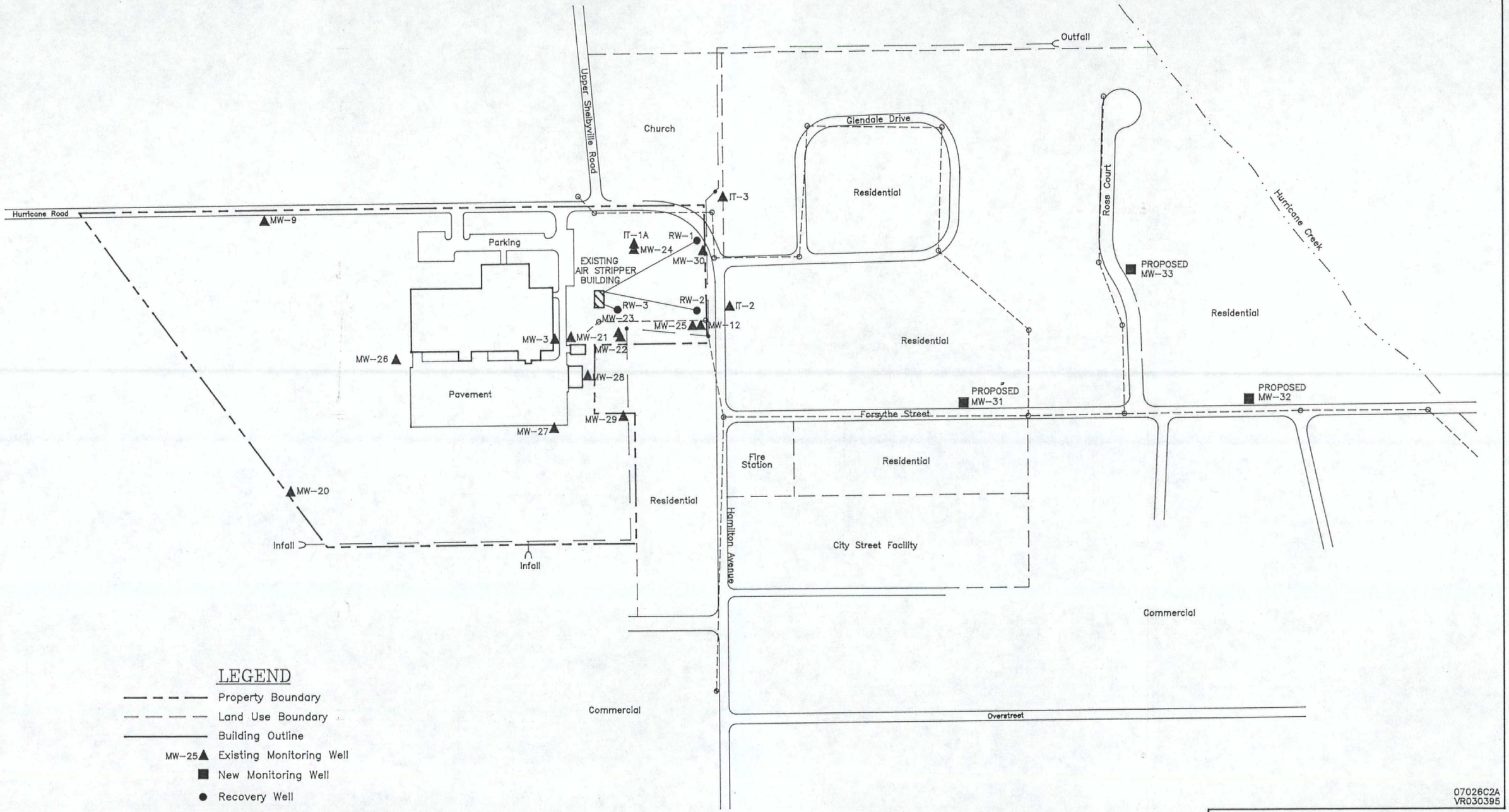
FIGURE 5-2

CORRECTIVE MEASURE ALTERNATE 2

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08



07026C2A
VR030395

FIGURE 5-3

CORRECTIVE MEASURE ALTERNATE 2A

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08

EARTH TECH

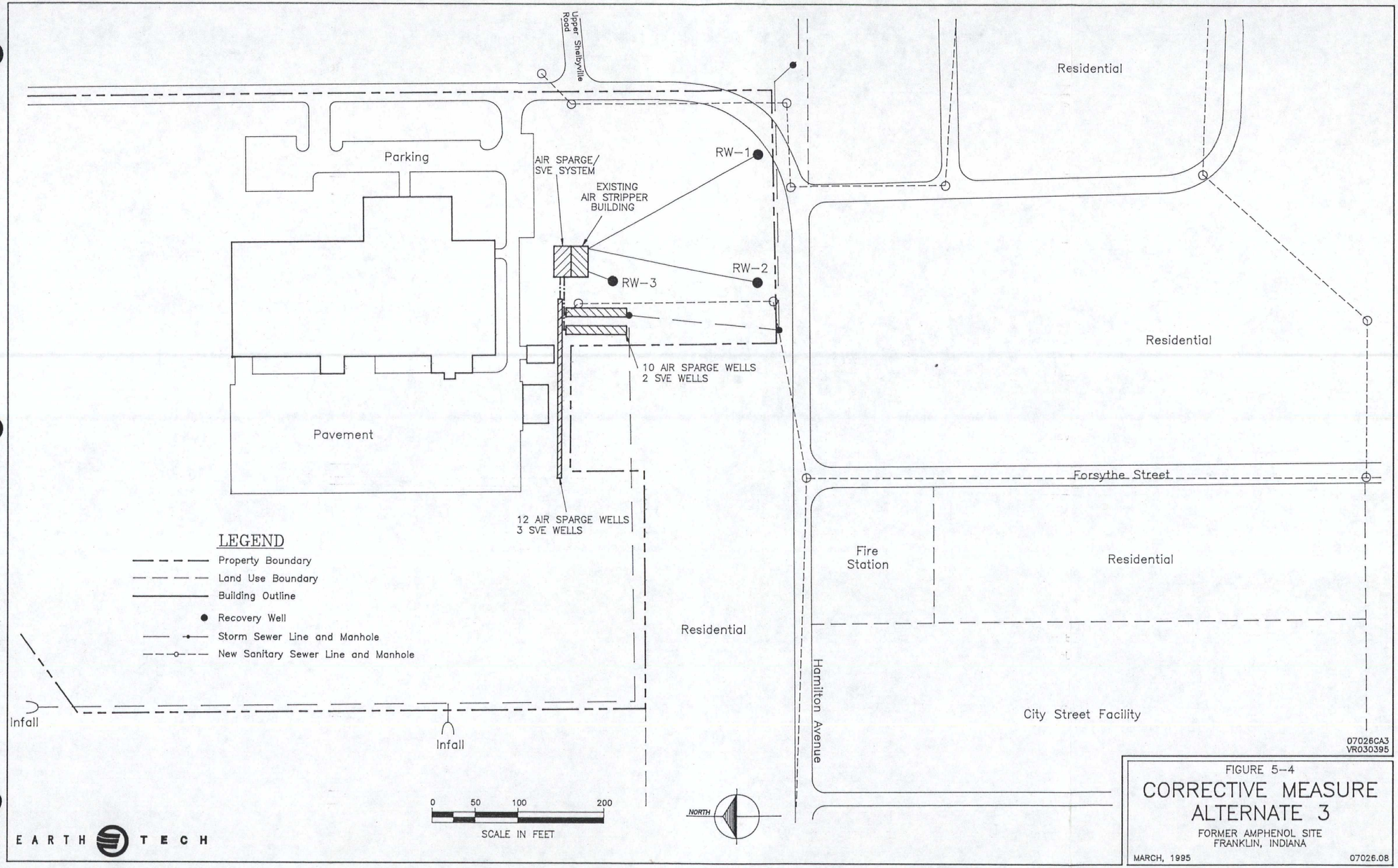


FIGURE 5-4

CORRECTIVE MEASURE ALTERNATE 3

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995 07026.08

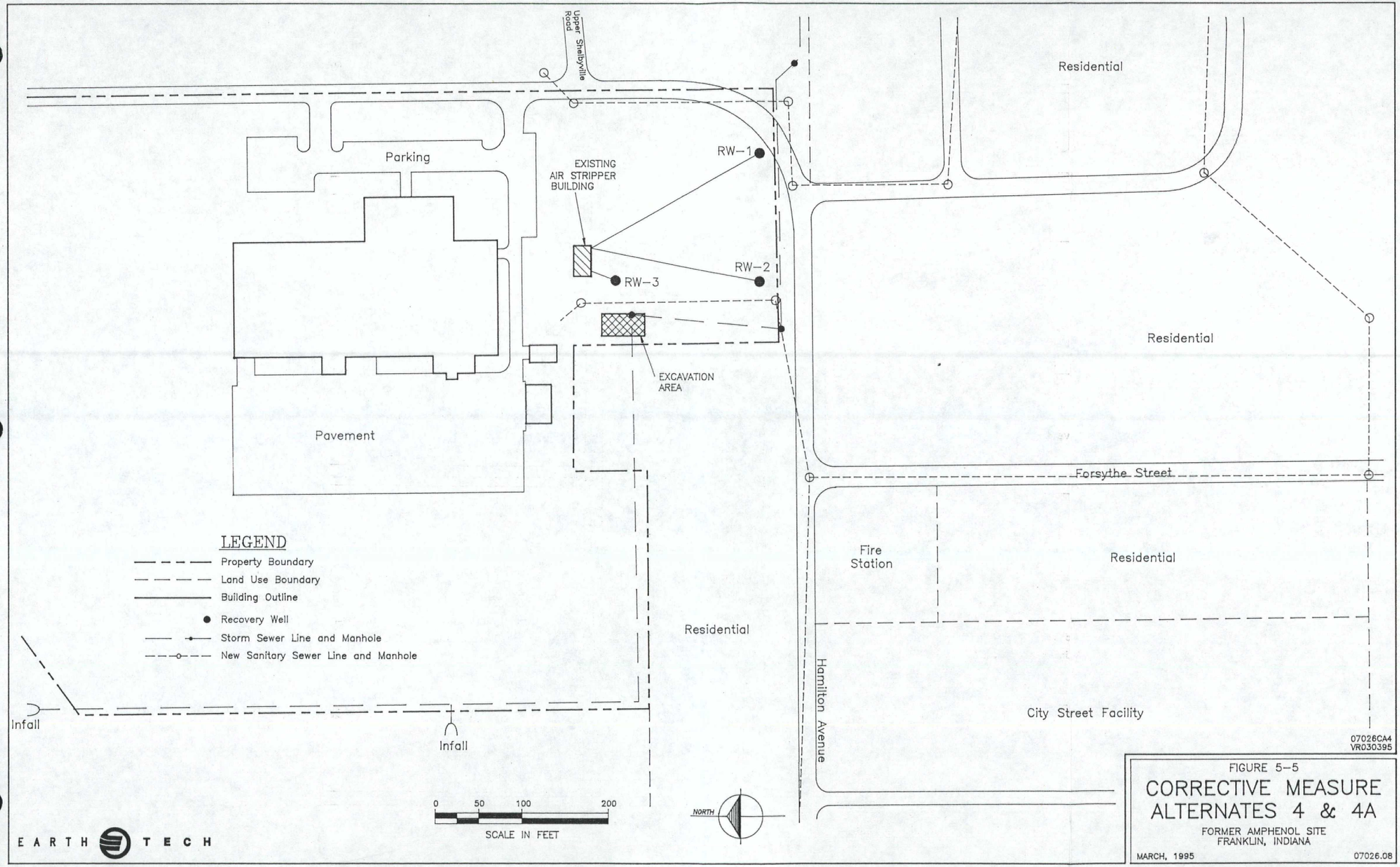


FIGURE 5–5

CORRECTIVE MEASURE ALTERNATES 4 & 4A

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08

Upper Shelbyville Road

Residential

Parking

EXISTING AIR STRIPPER BUILDING

RW-1

RW-2

RW-3

10 AIR SPARGE WELLS
2 SVE WELLS

Residential

Pavement

Forsythe Street

Fire Station

Residential

Residential

Hamilton Avenue

City Street Facility

LEGEND

- Property Boundary
- Land Use Boundary
- Building Outline
- Recovery Well
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole

Infall

Infall

0 50 100 200

SCALE IN FEET

NORTH

07026CA5
VR030395

FIGURE 5-6

CORRECTIVE MEASURE ALTERNATE 5

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08

EARTH TECH

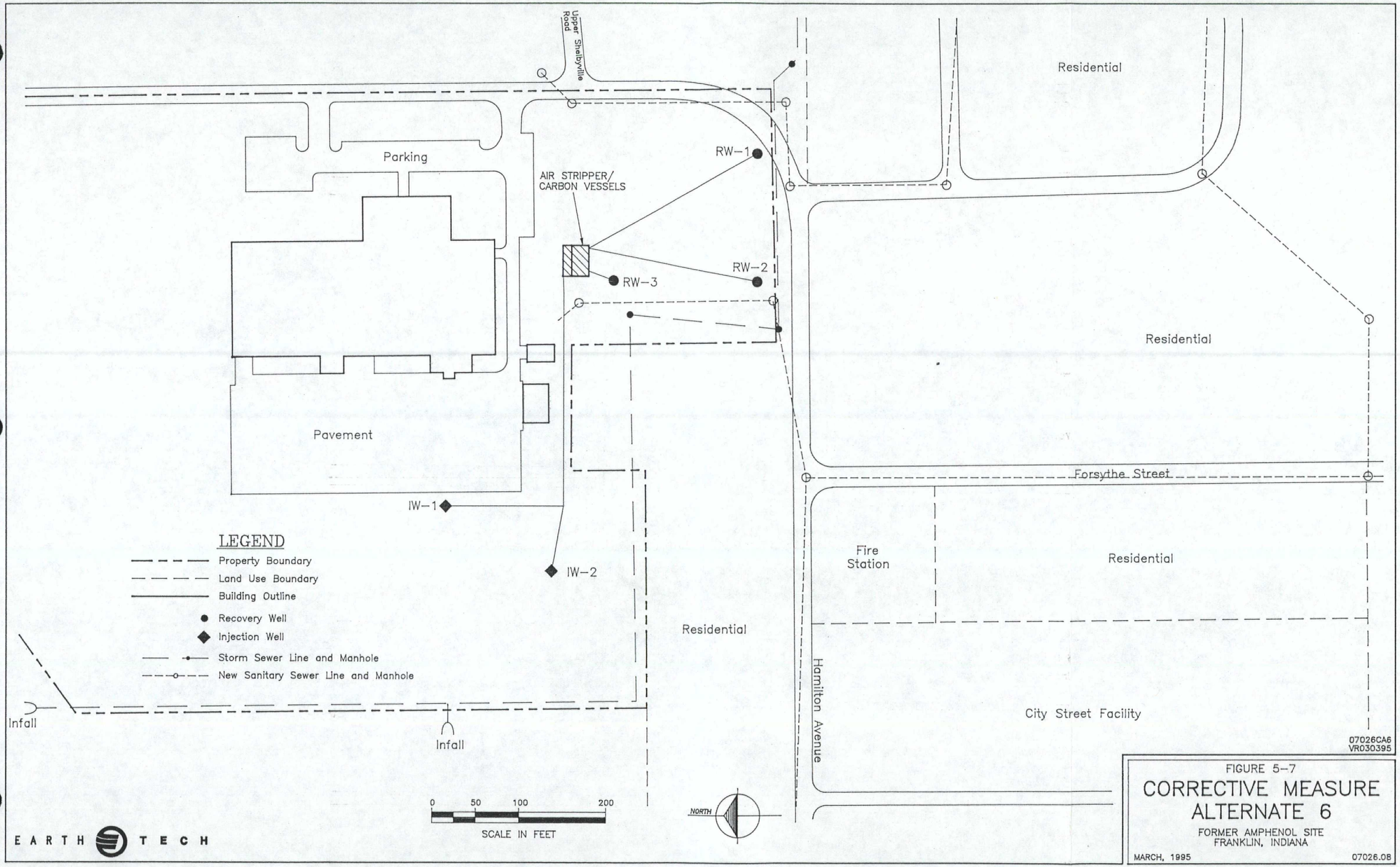


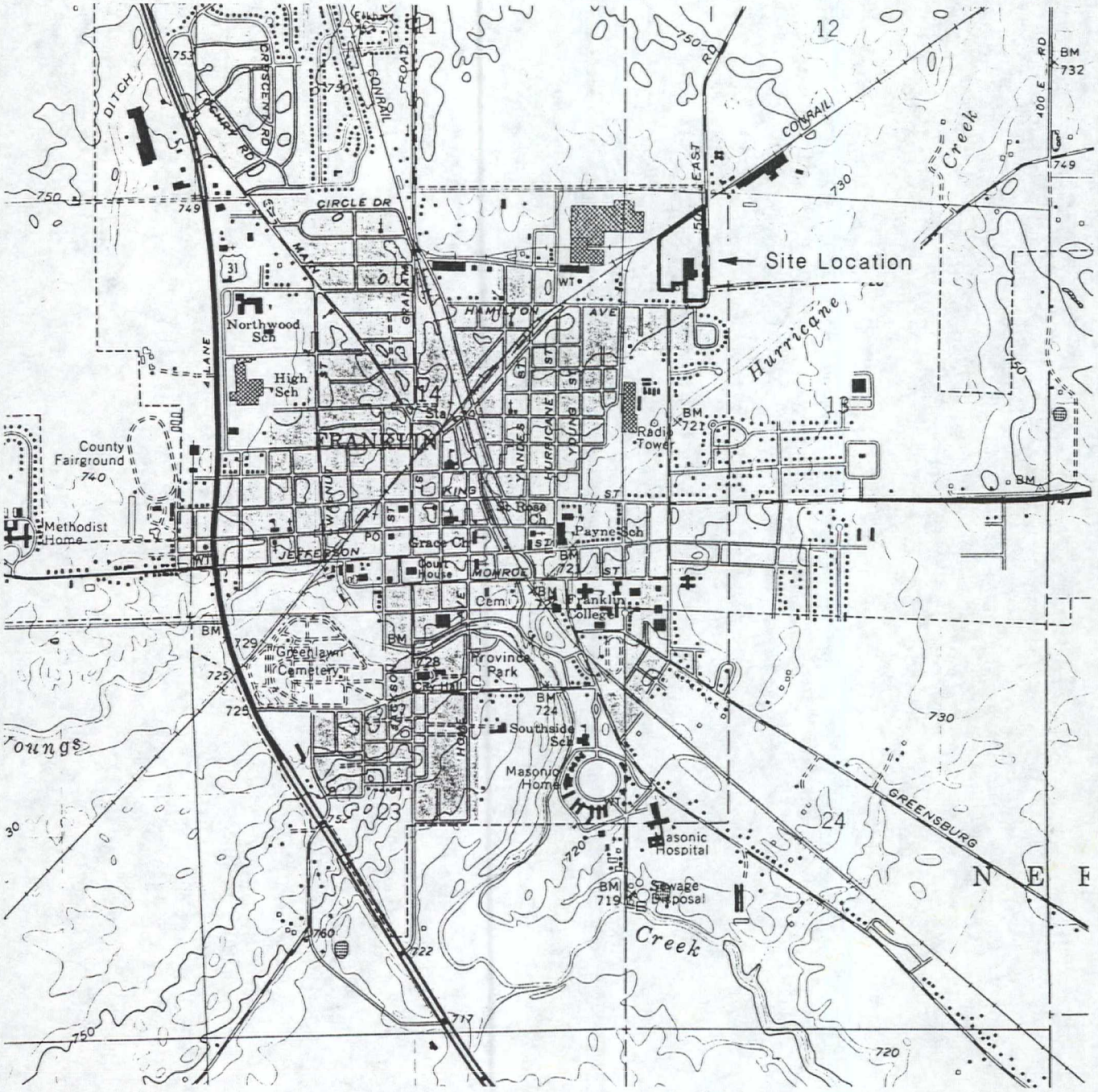
FIGURE 5–7

CORRECTIVE MEASURE ALTERNATE 6

FORMER AMPHENOL SITE
FRANKLIN, INDIANA

MARCH, 1995

07026.08



Base taken from USGS Franklin, Ind. 7.5' topographic quadrangle

N

0 2000 feet

Scale

Figure 1

Site Location Map

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GEOSCIENCES
627 North Morton Street
Bloomington, Indiana 47404 • (812) 336-0972
a member of Summit Environmental Group, Inc.

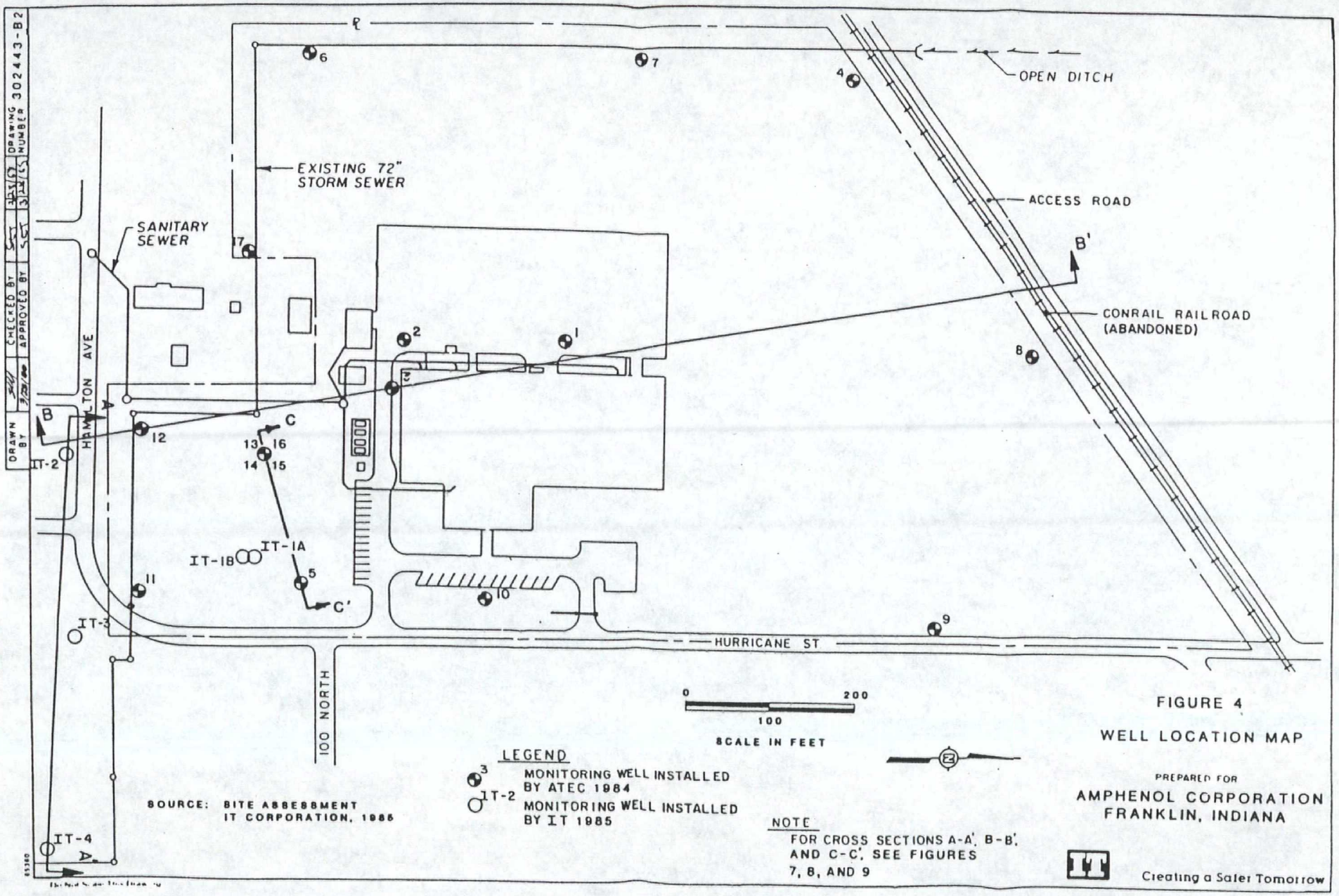


Figure 2. Site map showing locations of 1984-1985 monitoring wells (modified from IT, 1988).

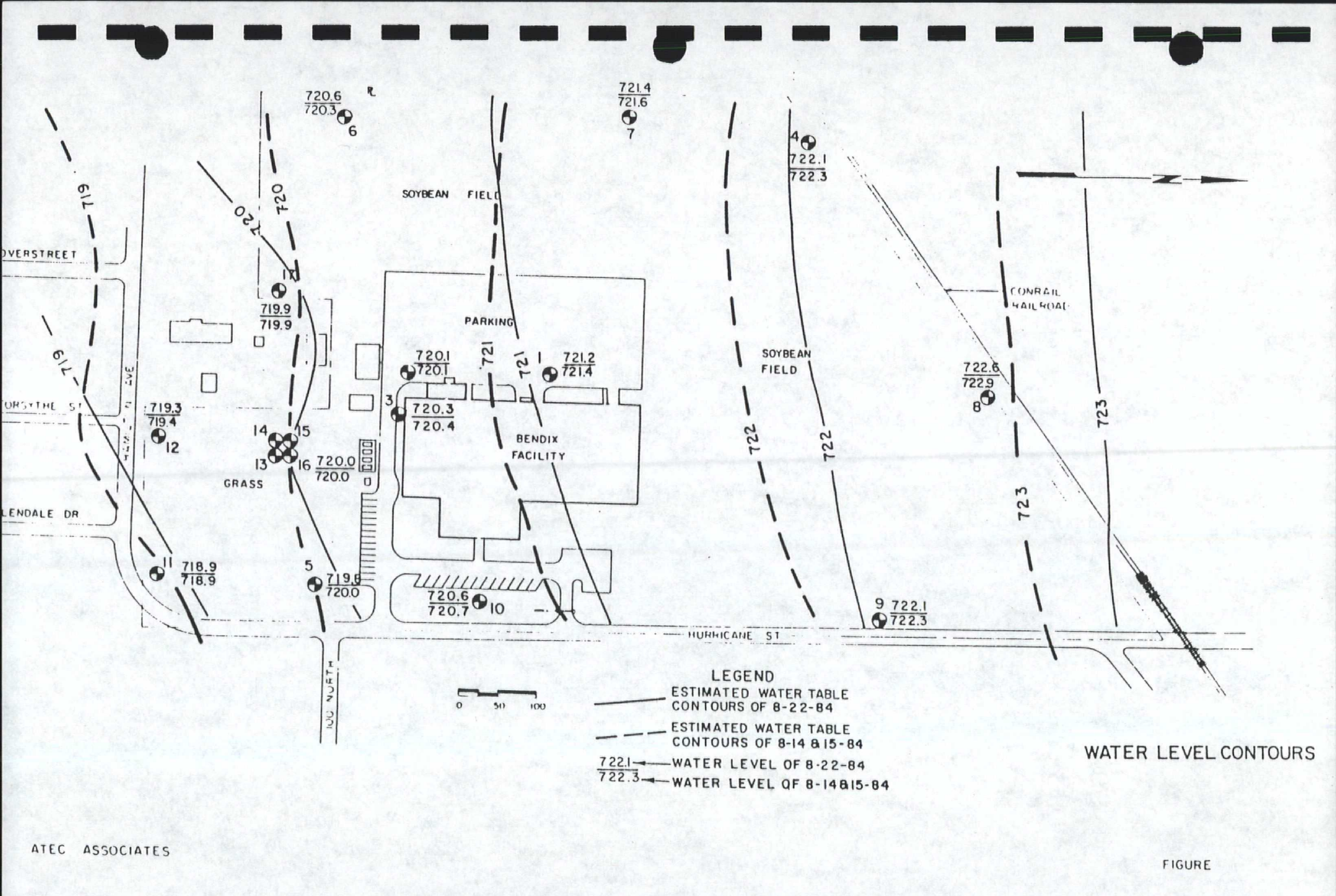


Figure 3. Unit B potentiometric contour map, August, 1984 (modified from ATEC, 1984b).

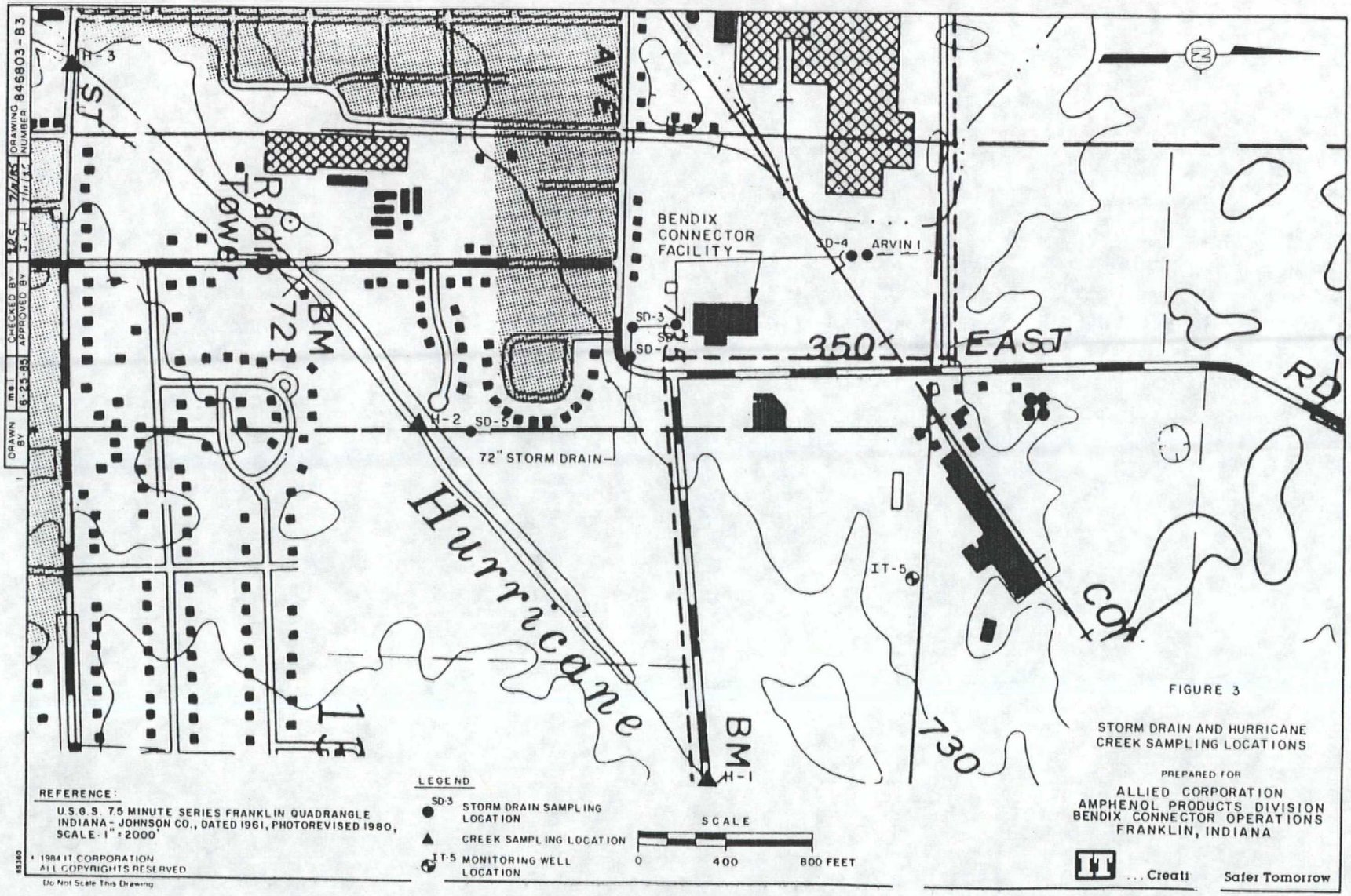
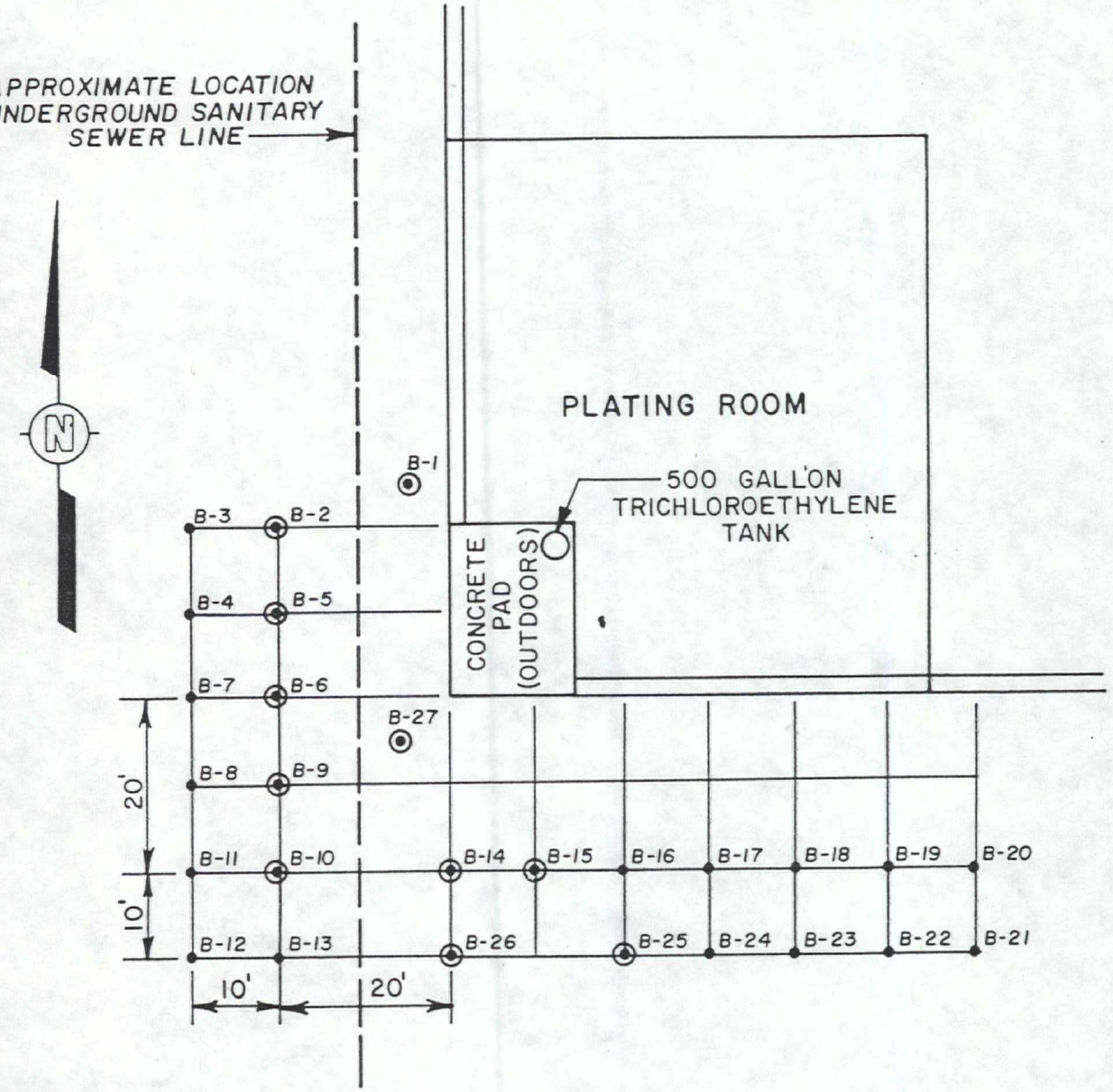


Figure 4. Map showing locations of monitoring well IT-5, and storm sewer and surface water sampling points, February - March, 1985 (modified from IT, 1985).



LEGEND

- • SOIL SAMPLING LOCATION
- ⊙ SOIL SAMPLES SUBMITTED FOR VOLATILE ORGANICS ANALYSES

FIGURE 4

SHALLOW
SOIL SAMPLING GRID

PREPARED FOR

ALLIED CORPORATION
AMPHENOL PRODUCTS DIVISION
BENDIX CONNECTOR OPERATIONS
FRANKLIN, INDIANA

SCALE

0 20 40 FEET

DRAWN BY RW 4-2-85
CHECKED BY LRS 7/11/85
APPROVED BY [illegible]
DRAWING NUMBER 846803-A4

IT ... Creating a Safer Tomorrow

65360

"Do Not Scale This Drawing"

Figure 5. Map showing locations of soil borings installed during 1985 plating room investigation (modified from IT. 1985)

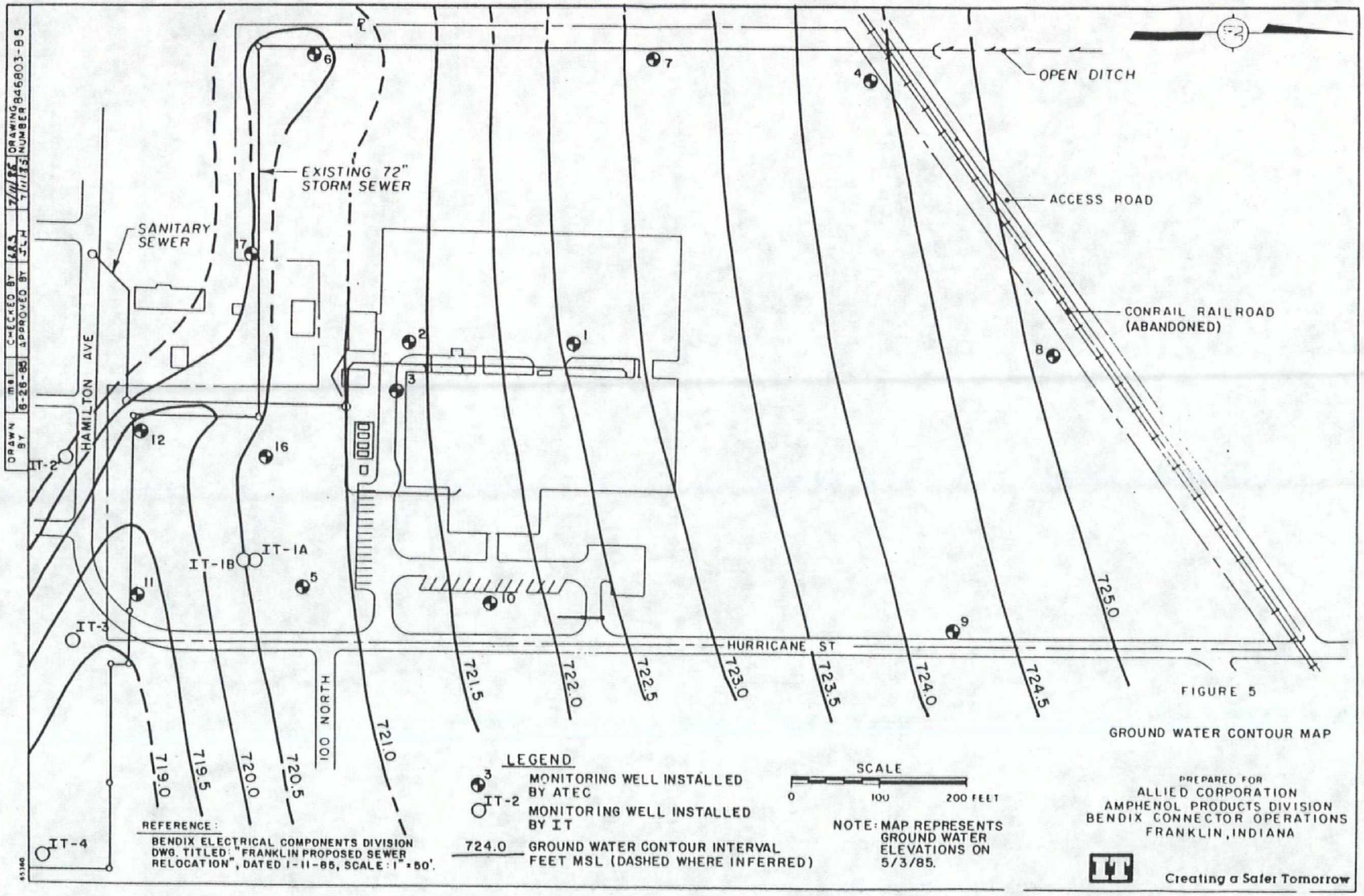


Figure 6. Unit B potentiometric contour map, May, 1985 (modified from IT, 1985).

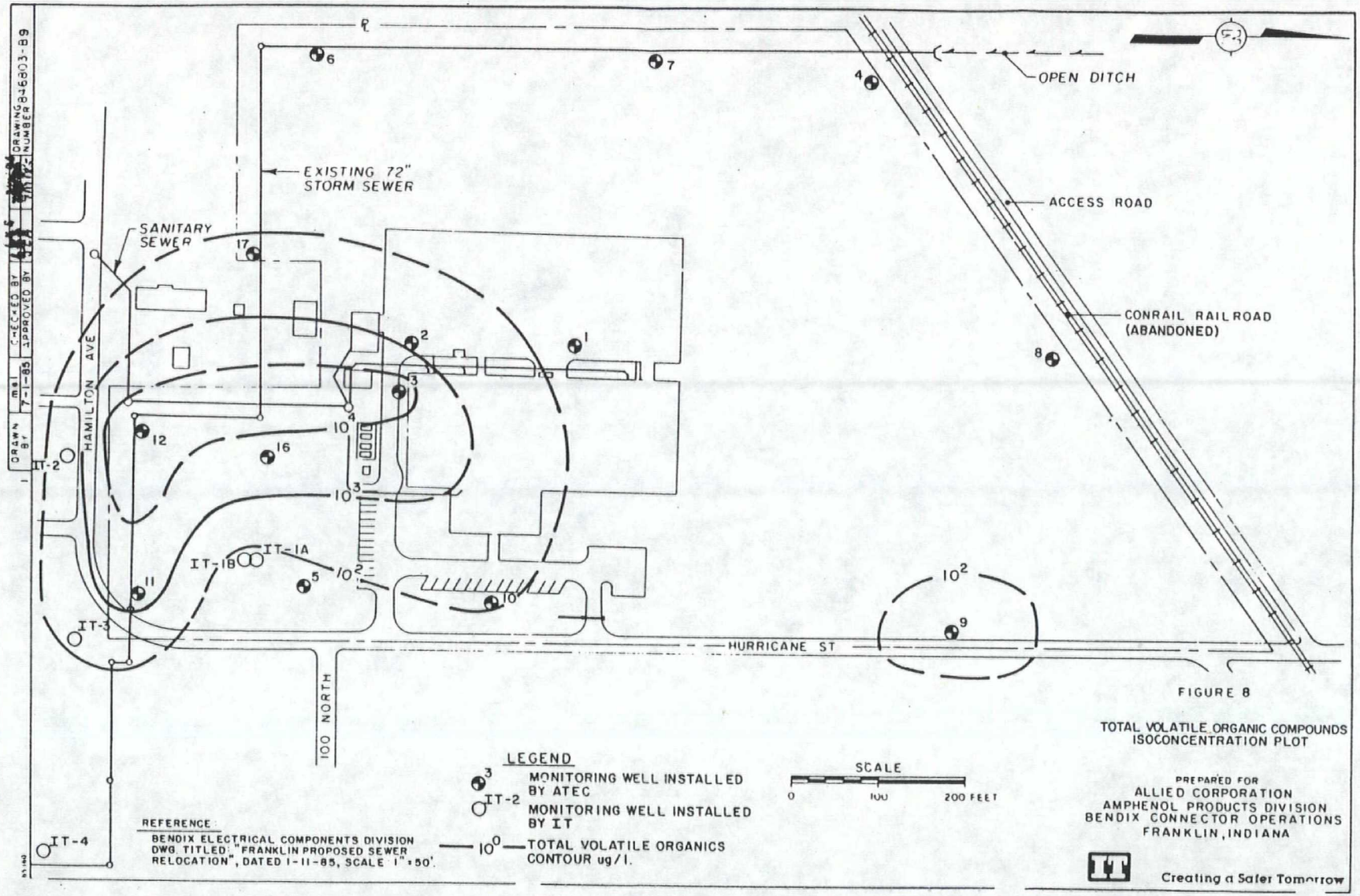


Figure 7. Isoconcentration map of VOCs in ground water, 1985 data (modified from IT, 1985).

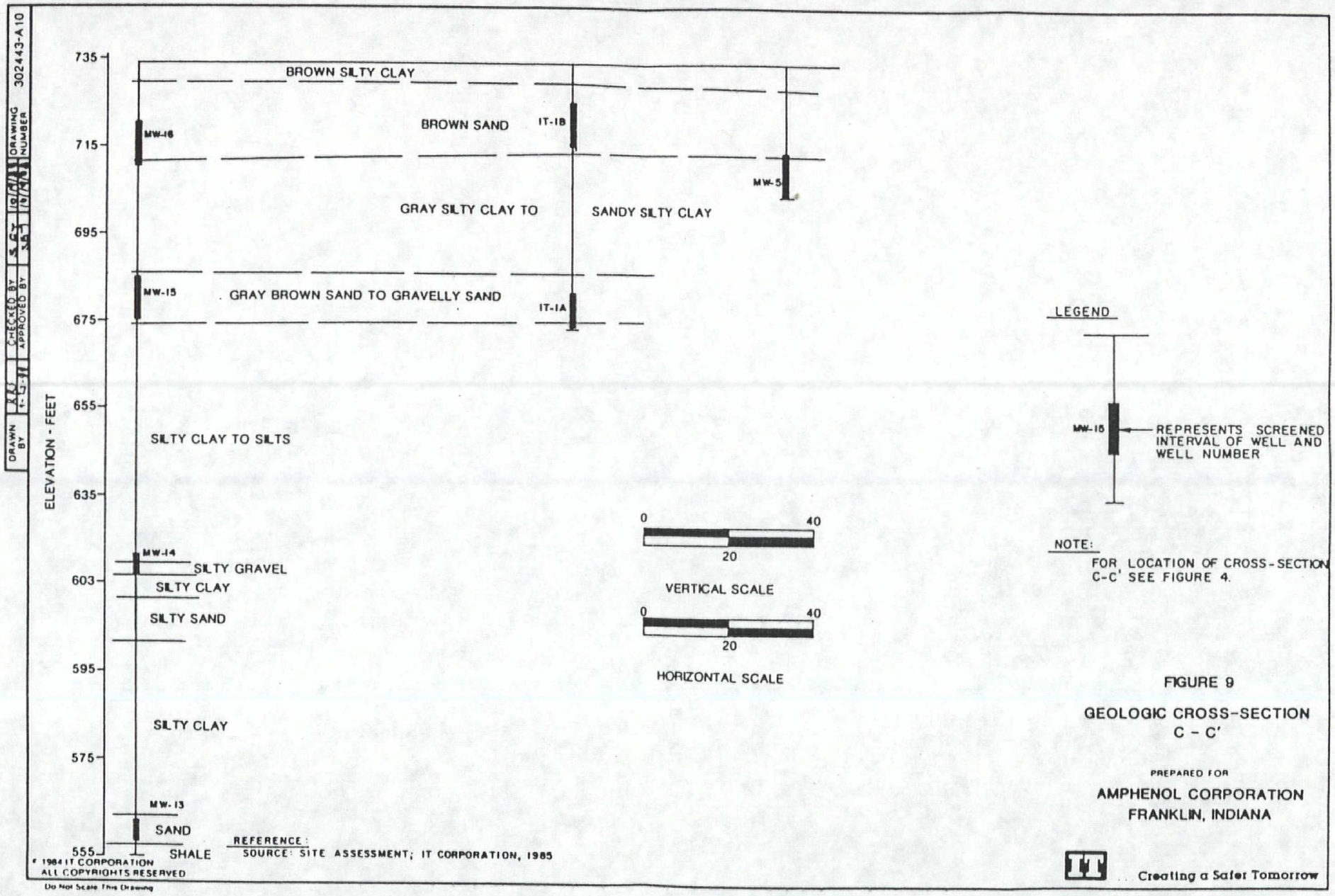
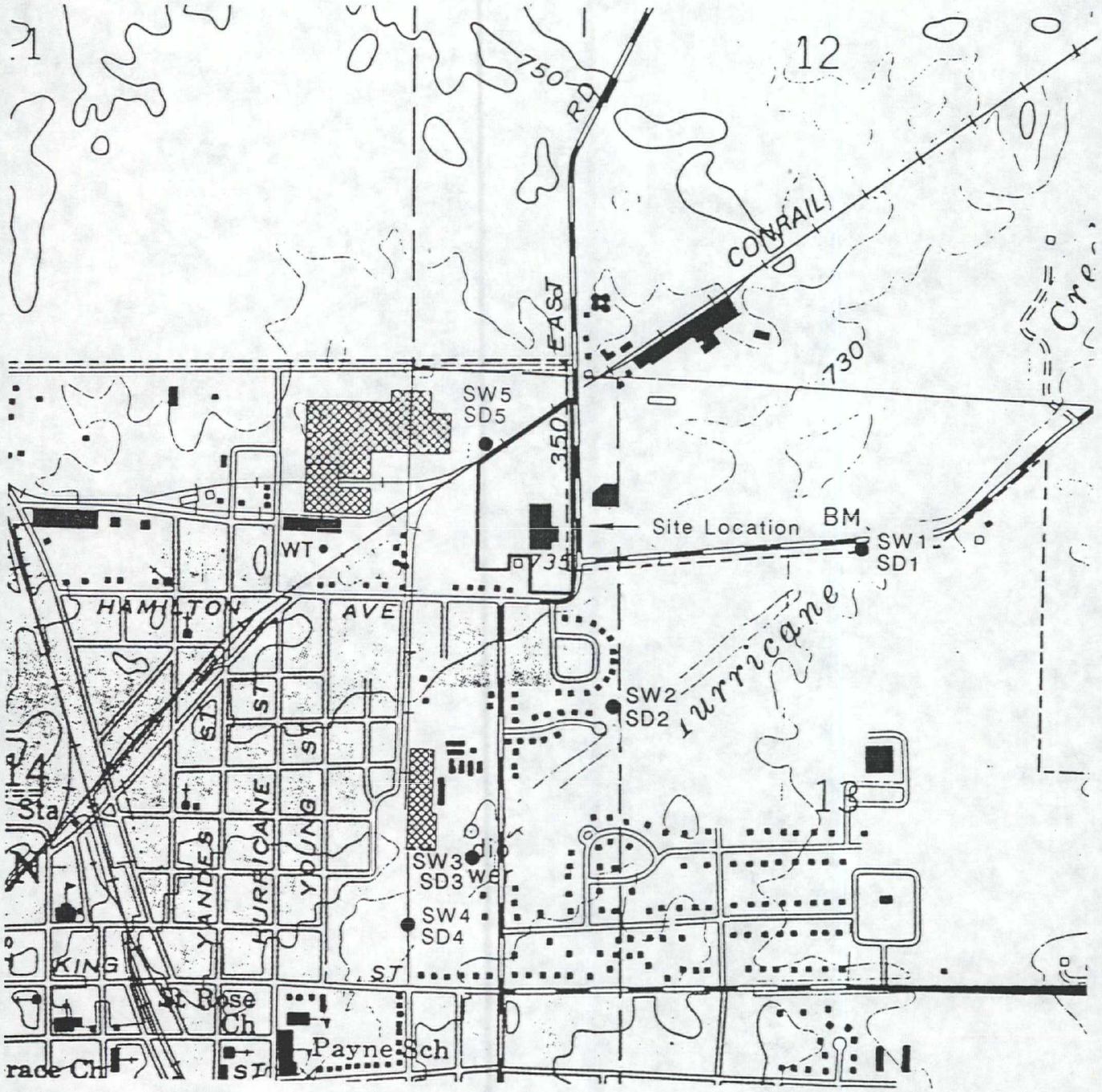


Figure 8. Geologic cross section based on 1984-1985 soil boring data (modified from IT, 1985).



Base modified from USGS Franklin, Ind. 7.5' topographic quadrangle

● Sampling Point

Figure 9

RFI surface water/sediment sampling location map.

N

0 1000 feet

Scale

Revised 5/24/91

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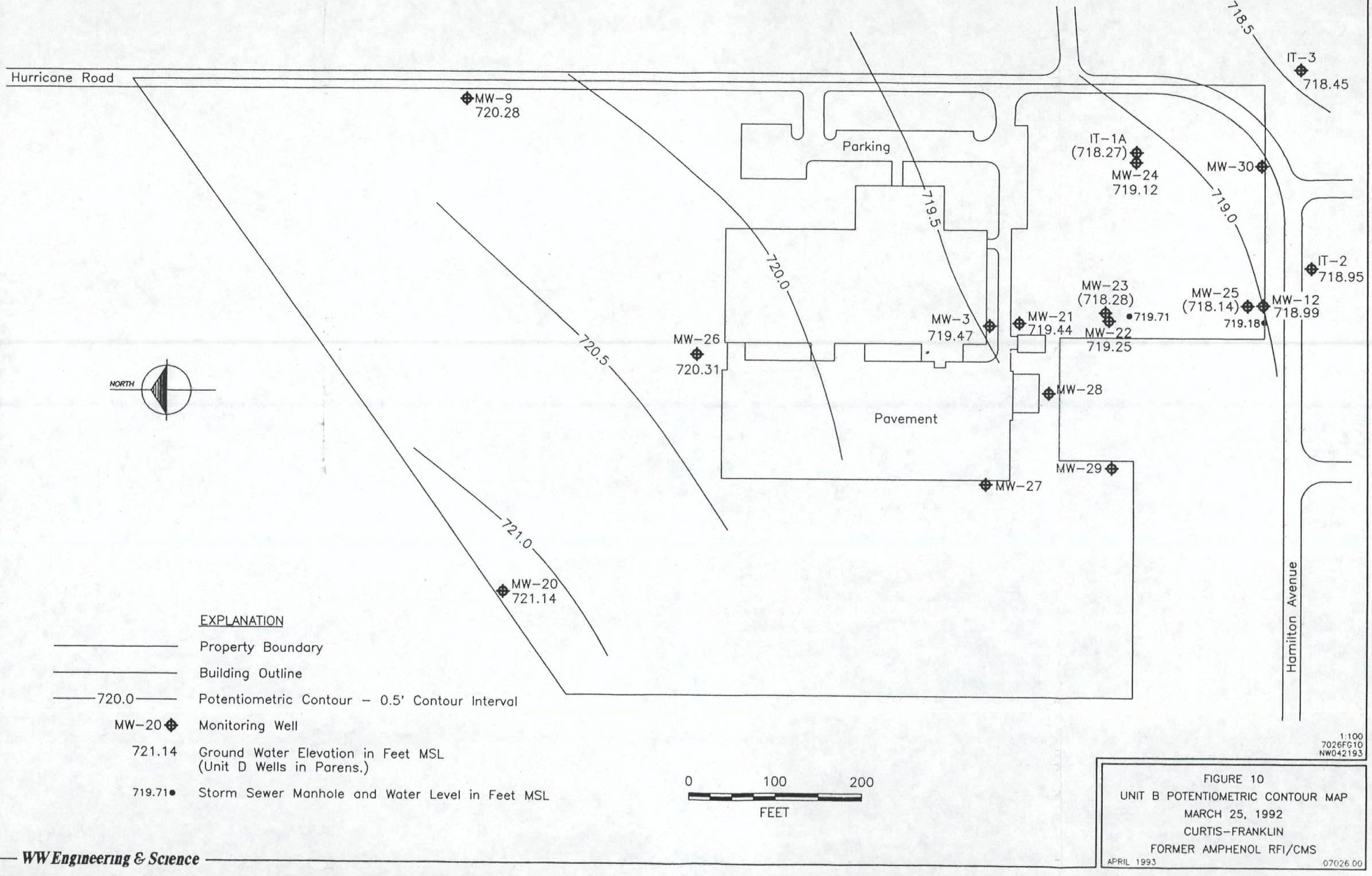
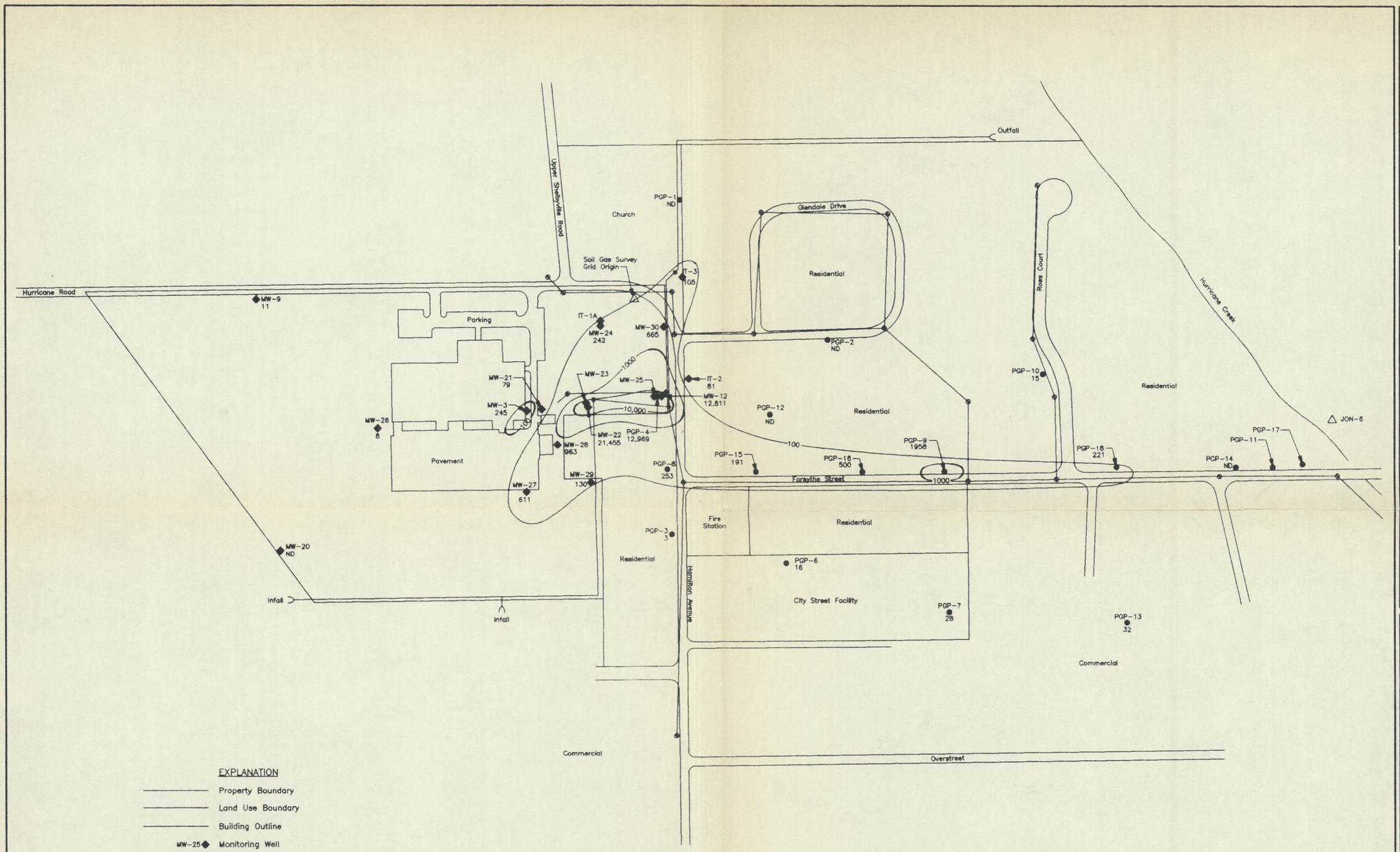


FIGURE 10
UNIT B POTENTIOMETRIC CONTOUR MAP
MARCH 25, 1992
CURTIS–FRANKLIN
FORMER AMPHENOL RFI/CMS
APRIL 1993 07026.00



EXPLANATION

- Property Boundary
- Land Use Boundary
- Building Outline
- MW-25 ◆ Monitoring Well
- PGP-1 ● Geoprobe Ground Water Sample Point
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole
- 100 VOC Concentration Contour (ug/L) (DCA+PCE+TCA+TCE)
- 817 VOC Concentration (ug/L), March, 1993
- ND No VOC Reported Above Detection Limit (See Table 8)
- Samples PGP-12, -13, -14 Collected May, 1993
- Background Well Data from February, 1992
- △ Benchmark

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NO	REVISIONS	BY	DATE

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

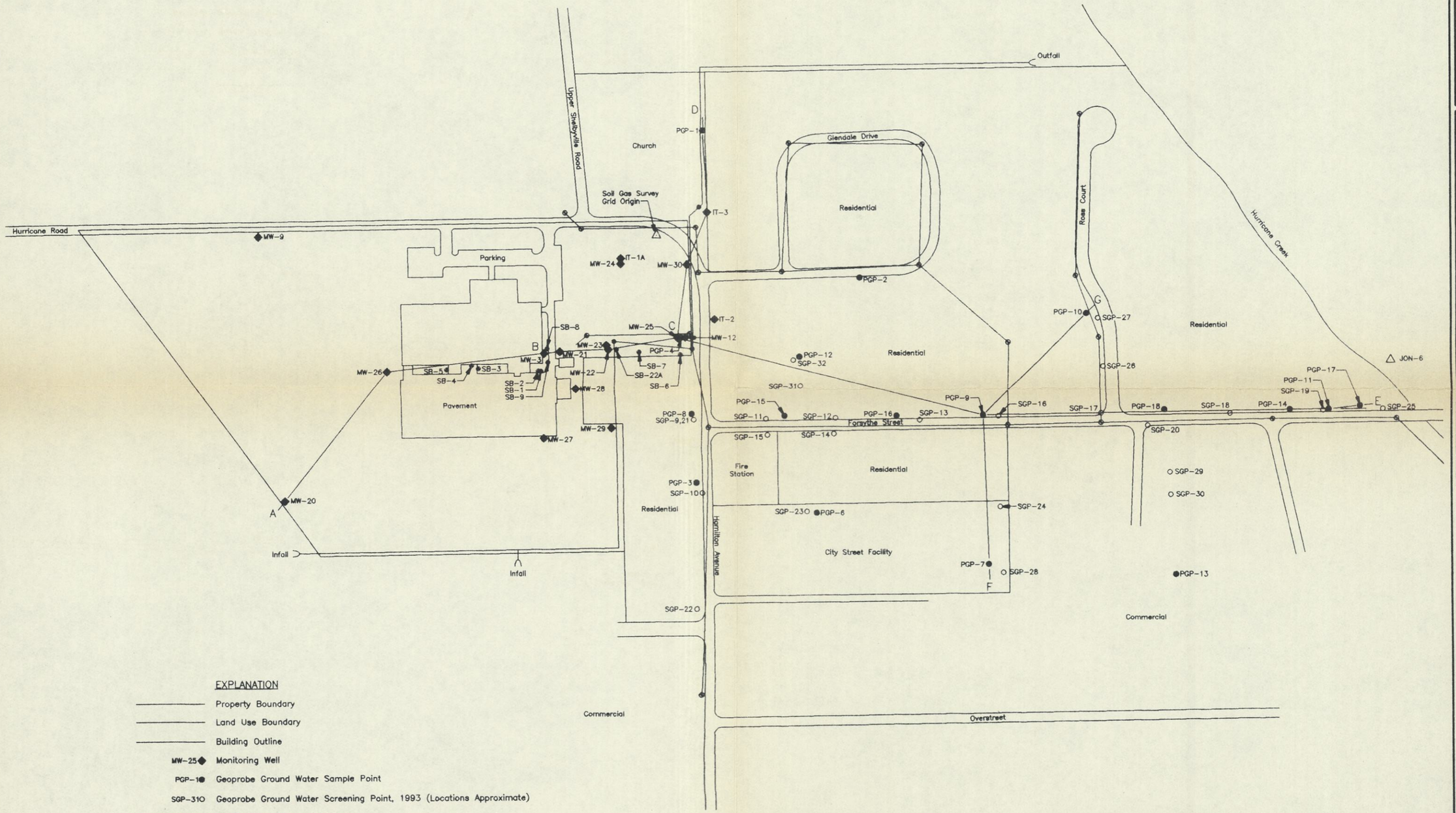
CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS

ISOCONCENTRATION MAP OF TOTAL VOCs IN GROUND WATER, MARCH 1993

DESIGNED BY JK	DATE 10-05-93
DRAWN BY MW	DATE 10-05-93
CHECKED BY	DATE
FILE 7026SSHBE	EXT MW061394
SCALE 1"=100'	
DRAWING 1:100	
PLOT	
PROJECT 07026.00	

6E

SHEET NO



EXPLANATION

- Property Boundary
- Land Use Boundary
- Building Outline
- MW-25 ◆ Monitoring Well
- PGP-1 ● Geoprobe Ground Water Sample Point
- SGP-31 ○ Geoprobe Ground Water Screening Point, 1993 (Locations Approximate)
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole
- F ——— G Geologic Cross Section Line
- SB-1 ● Soil Boring
- △ Benchmark

NORTH

0 100 200
FEET

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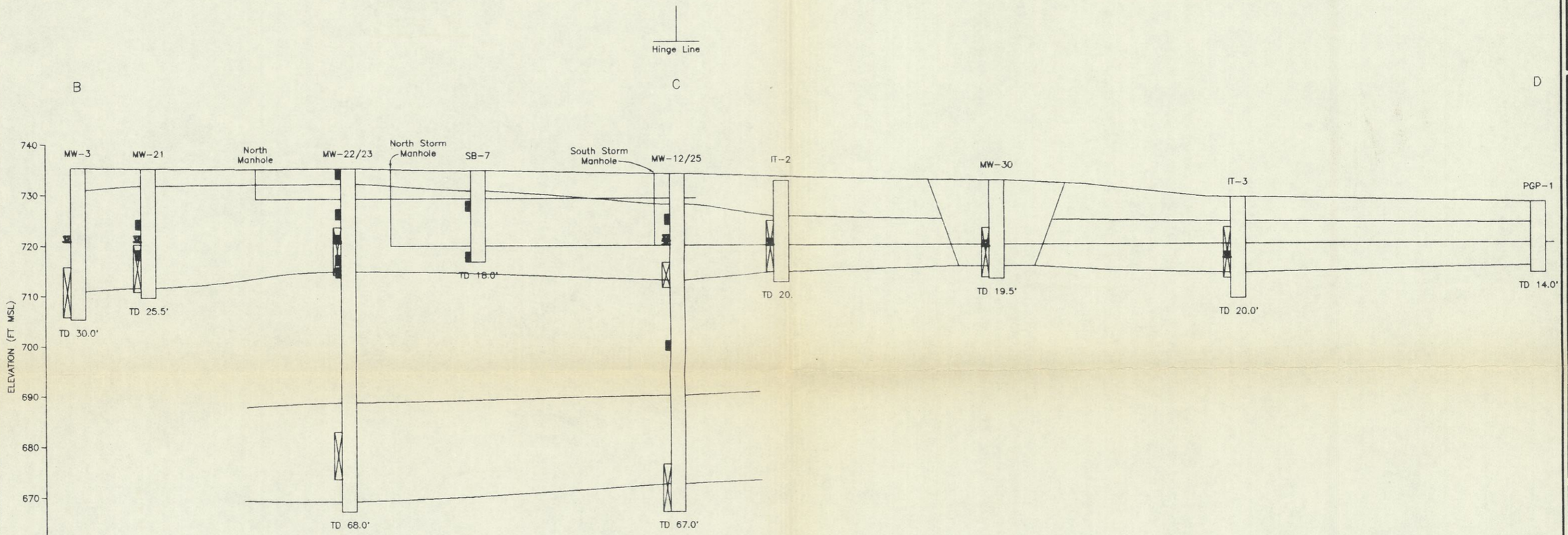
NO.	REVISIONS	BY	DATE

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS
SITE MAP

DESIGNED BY: JDB	DATE: 04-28-93
DRAWN BY: NW	DATE: 04-28-93
CHECKED BY:	DATE:
FILE: 7028SH3	EDIT: NW060294
SCALE: 1"=100'	
DRAWING: 1:100	
PLOT:	
PROJECT: 07028.00	

3
SHEET NO.



0 25 50 feet

HORIZONTAL SCALE

2.5X VERTICAL EXAGGERATION

EXPLANATION

- Screened Interval
- Soil Sample
- 720.88 ▼ Ground Water Elevation in Ft MSL, February 16, 1993
- Storm Sewer
- New Sanitary Sewer
- Line of Section Shown on Sheet 3

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BY	DATE	REVISIONS	BY	DATE

CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS

CROSS SECTION B-C-D

DESIGNED BY: NW	DATE: 04-22-93
DRAWN BY: NW	DATE: 04-22-93
CHECKED BY:	DATE:
FILE: 7026SH4B	EDIT: NWD42293
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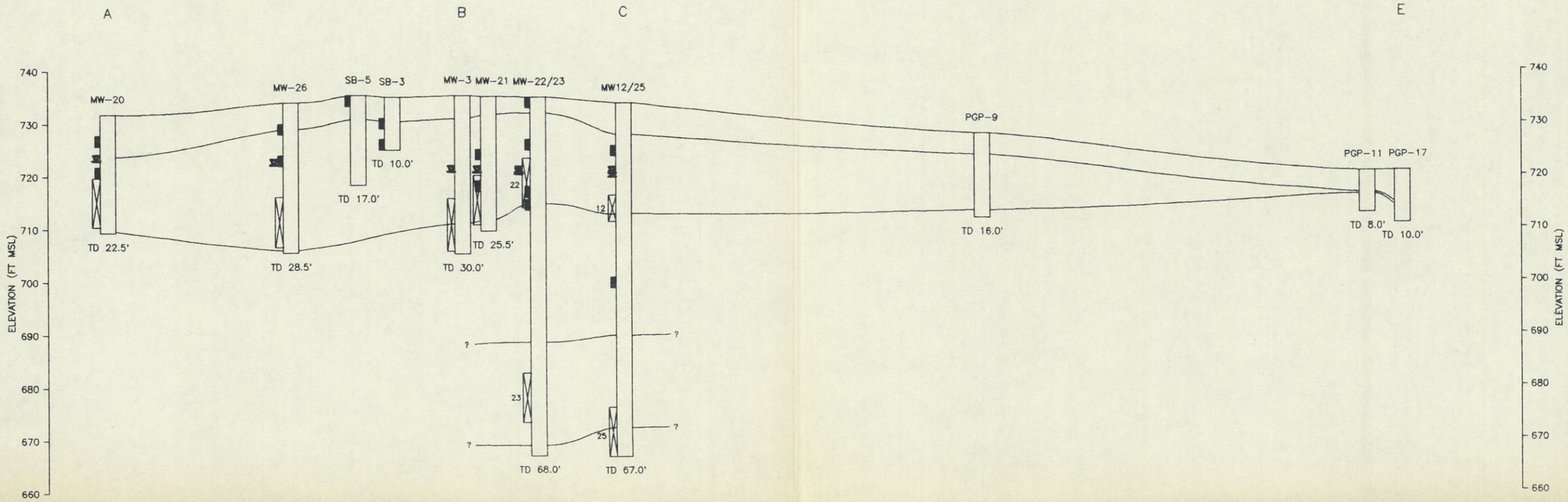
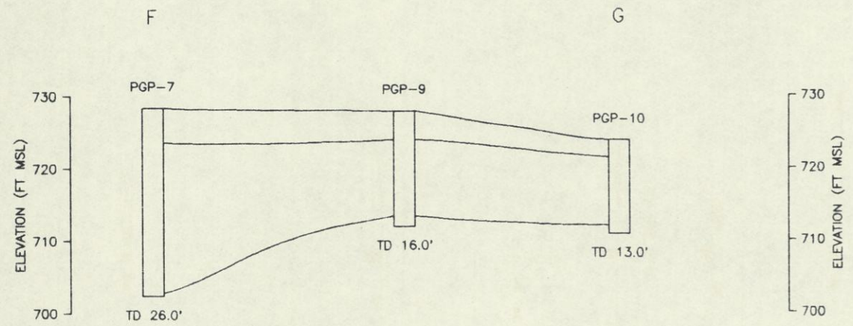
HORIZONTAL	1"=10'
VERTICAL	
PROJECT	07026.00

4B

SHEET NO.





0 100 200 FEET

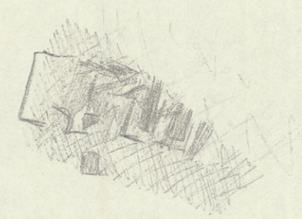
HORIZONTAL SCALE

10X VERTICAL EXAGGERATION

EXPLANATION

- Screened Interval
- Soil Sample
- Ground Water Elevation in Ft MSL, February 16, 1993

Lines of Section Shown on Sheet 3



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REVISIONS | BY | DATE

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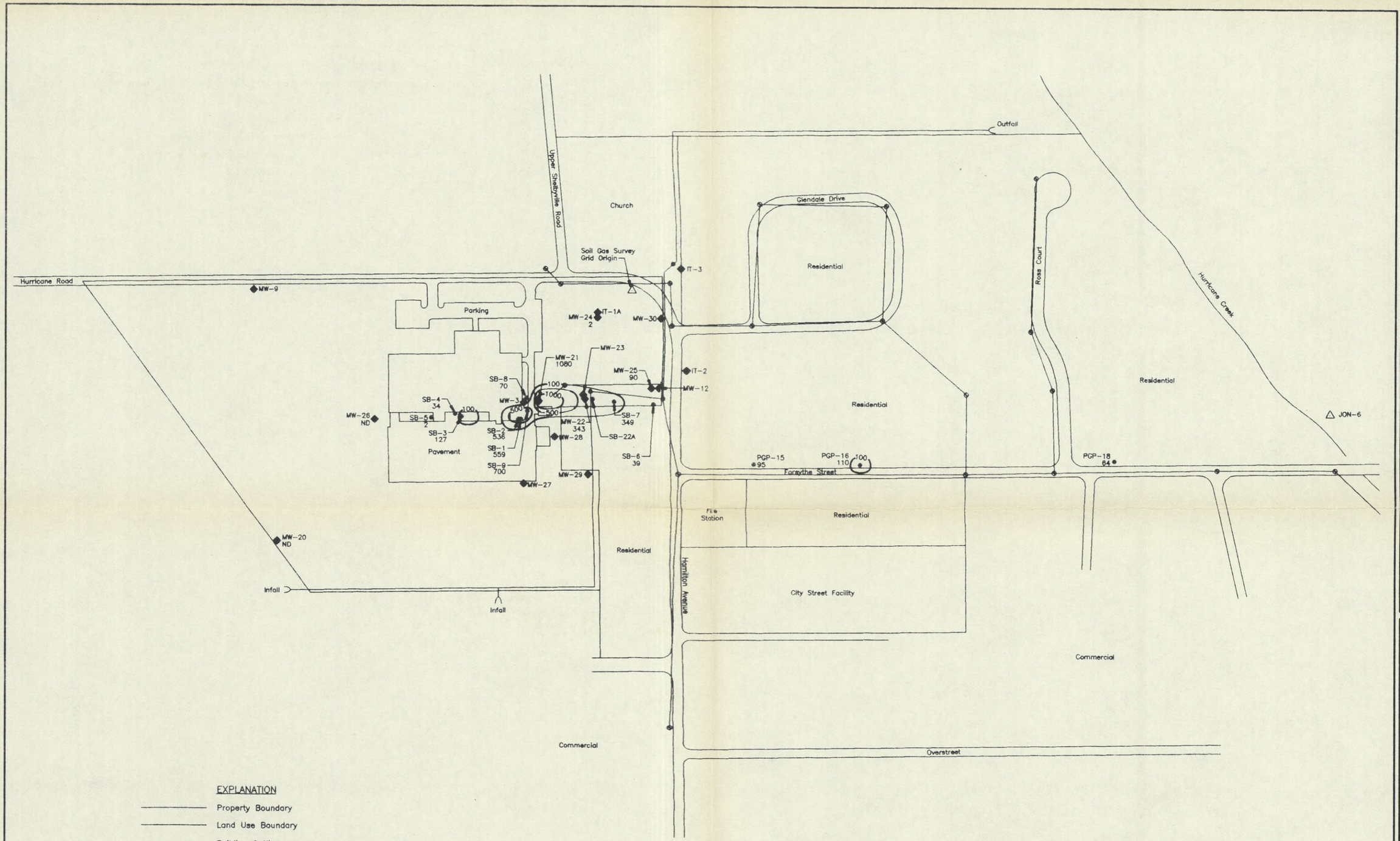
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS

CROSS SECTIONS A-B-C-E & F-G

DESIGNED BY NW	DATE 04-22-93
DRAWN BY NW	DATE 04-22-93
CHECKED BY	DATE
FILE 7026SH4A	DWG NW060294
SCALE	1"=100'
HORIZONTAL	1"=10'
VERTICAL	
PROJECT	07026.00

4A
SHEET NO.



EXPLANATION

- Property Boundary
- Land Use Boundary
- Building Outline
- MW-25 ◆ Monitoring Well
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole
- SB-1 ● Soil Boring
- 100 Total VOC Concentration Contour (ug/Kg) (DCA+PCE+TCA+TCE)
- 536 Total VOC Concentration in Soil Samples Collected from 0-12 Feet (ug/Kg) (DCA+PCE+TCA+TCE)
- ND No VOC Reported Above Detection Limits (See Table 8)
- △ Benchmark

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REVISIONS | BY | DATE | NO.

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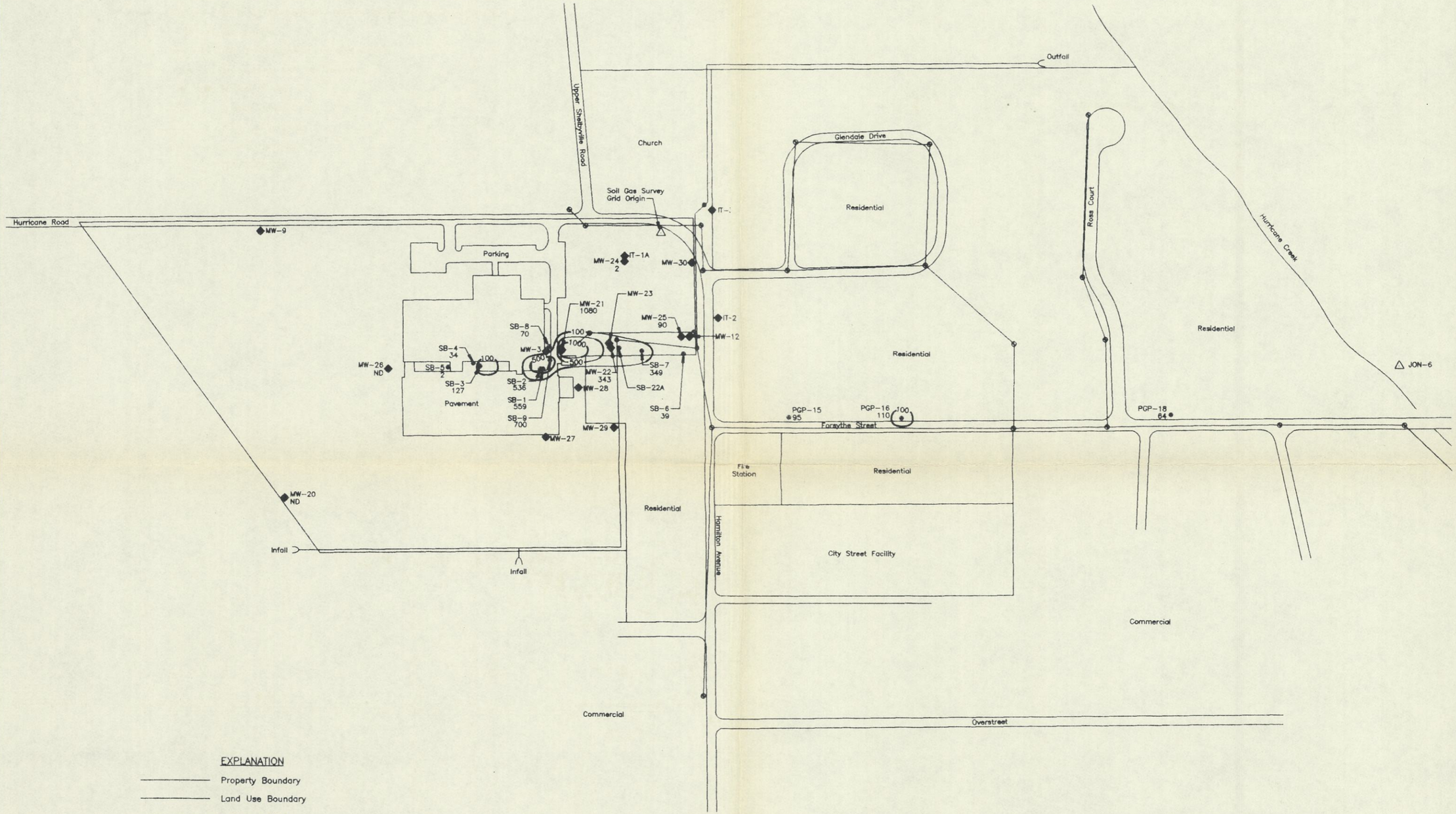
CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS

TOTAL VOCs IN SOIL SAMPLES
≤12 FEET DEEP

DESIGNED BY JDB	DATE 10-06-93
DRAWN BY MW	DATE 10-06-93
CHECKED BY	DATE
FILE 7028SHDA	DWG NWD11195
SCALE 1"=100'	
DRAWING 1:100	
PLOT	
PROJECT 07028.00	

5A

SHEET NO.



EXPLANATION

- Property Boundary
- Land Use Boundary
- Building Outline
- MW-25 ◆ Monitoring Well
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole
- SB-1 ● Soil Boring
- 100 — Total VOC Concentration Contour (ug/Kg) (DCA+PCE+TCA+TCE)
- 536 Total VOC Concentration in Soil Samples Collected from 0–12 Feet (ug/Kg) (DCA+PCE+TCA+TCE)
- ND No VOC Reported Above Detection Limits (See Table 8)
- △ Benchmark

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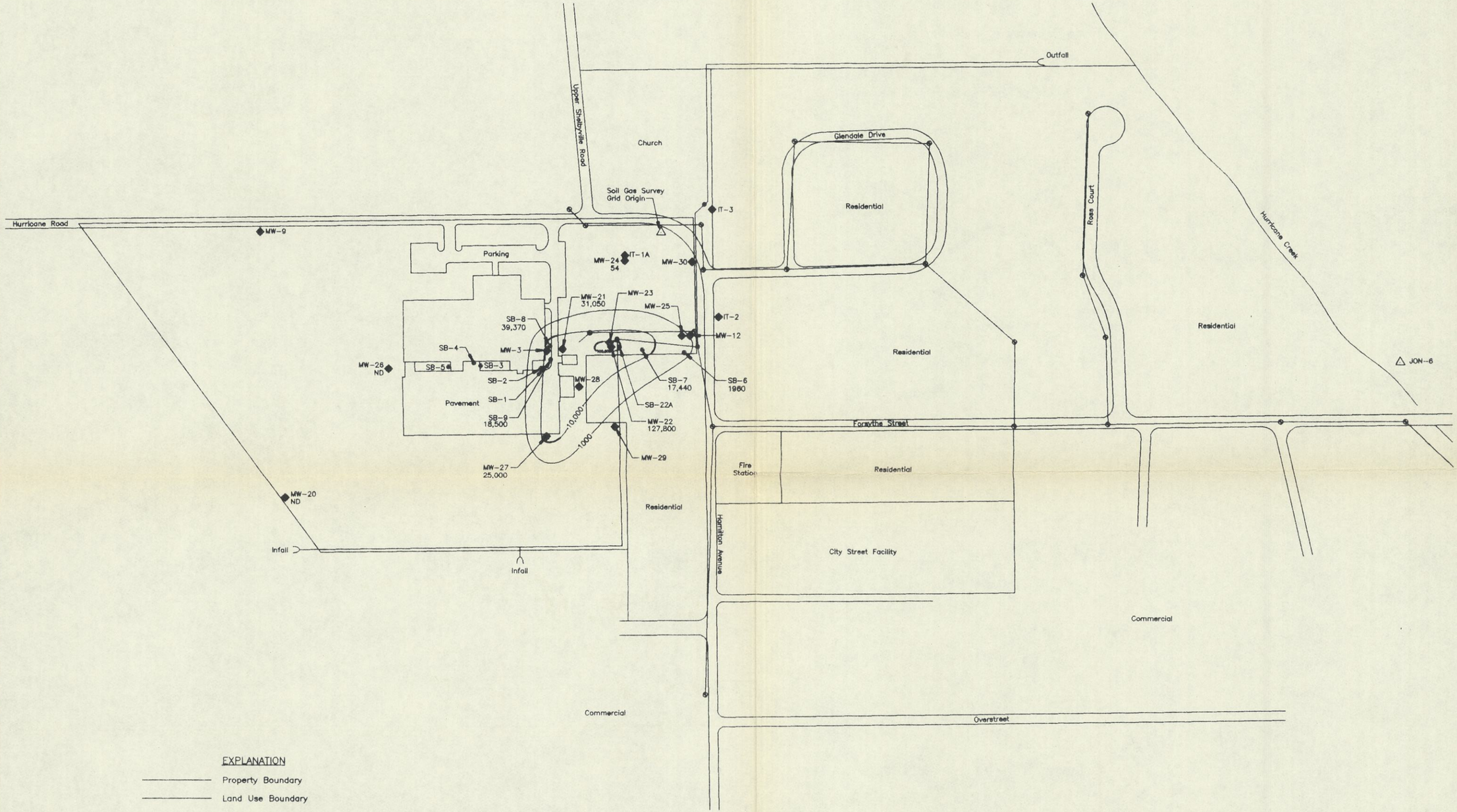
REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

CURTIS–FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS
TOTAL VOCs IN SOIL SAMPLES ≤12 FEET DEEP

DESIGNED BY: JDB	DATE: 10-06-93
DRAWN BY: MW	DATE: 10-06-93
CHECKED BY:	DATE:
FILE: 7028SHSA	DIR: MWD11195
SCALE: 1"=100'	
DRAWING: 1:100	
PLOT:	
PROJECT: 07028.00	

5A
SHEET NO.



EXPLANATION

- Property Boundary
- Land Use Boundary
- Building Outline
- MW-25 ◆ Monitoring Well
- Storm Sewer Line and Manhole
- New Sanitary Sewer Line and Manhole
- SB-1 ● Soil Boring
- 100 Total VOC Concentration Contour (ug/Kg) (DCA+PCE+TCA+TCE)
- 18,500 Total VOC Concentration in Soil Samples Collected Below 12 Feet (ug/Kg) (DCA+PCE+TCA+TCE)
- ND No VOC Reported Above Detection Limits (See Table 8)
- △ Benchmark

WW Engineering & Science
A Stearns Company
5010 Stone Mill Road - Bloomington, IN 47408 - (812) 336-6672

NO.	REVISIONS	BY	DATE

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

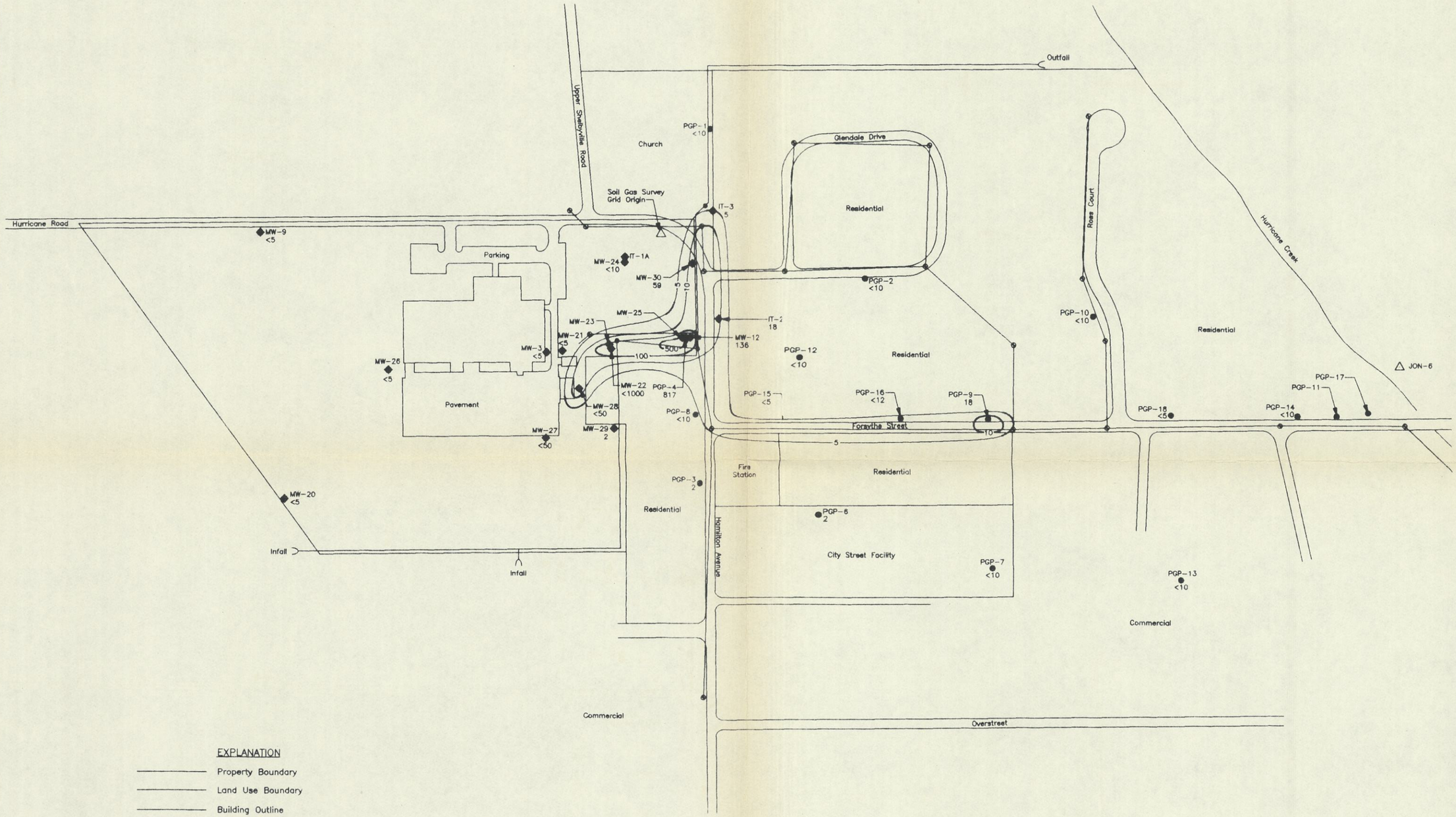
CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS

TOTAL VOCs IN SOIL SAMPLES >12 FEET DEEP

DESIGNED BY	JDB	DATE	10-06-93
DRAWN BY	NW	DATE	10-06-93
CHECKED BY		DATE	
FILE	7026SH2B	DWF	NW061384
SCALE	1"=100'		
DRAWING	1:100		
PLOT			
PROJECT	07026.00		

5B

SHEET NO.



WW Engineering & Science
A Summit Company
5010 Shoreline Road · Bloomington, IN 47408 · (812) 336-6972

NO.	REVISIONS	BY	DATE
	REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS		

CURTIS-FRANKLIN
FRANKLIN, INDIANA
FORMER AMPHENOL RFI/CMS
ISOCONCENTRATION MAP OF DCA IN GROUND WATER, MARCH 1993

DESIGNED BY	JK	DATE	04-22-93
DRAWN BY	NW	DATE	04-22-93
CHECKED BY		DATE	
FILE	07028SH6A	CAD	NW081384
SCALE	1"=100'		
DRAWING	1:100		
PLOT			
PROJECT	07028.00		

6A
SHEET NO.